POLLUTION PREVENTION TECHNIQUES

METHOD	AREAS	TECHNIQUES
Source Reduction	Good Operating Practices	▷ Improve maintenance scheduling, record keeping, or procedures. ▷ Change production schedule to minimize equipment and feedstock changeovers. ▷ Other changes in operating practices. ▷ Inventory control.
	Inventory Control	▷ Institute procedures to ensure that materials do not stay in inventory beyond shelf life. ▷ Begin to test outdated materials - continue to use if still effective. ▷ Eliminate shelf-life requirements for stable materials. ▷ Institute better labeling procedures. ▷ Institute clearinghouse to exchange materials that would otherwise be discarded. ▷ Other changes in inventory control. ▷ Spill and leak prevention.
	Spill and Leak Prevention	▷ Improve storage or stacking procedures. ▷ Improve procedures for loading, unloading, and transfer operations. ▷ Install overflow alarms or automatic shutoff valves. ▷ Install vapor recovery systems. ▷ Implement inspection or monitoring program of potential spill or leak sources. ▷ Other spill and leak prevention. ▷ Surface preparation and finishing.
	Surface Preparation and Cleaning	▷ Modify spray systems or equipment. ▷ Substitute coating materials used. ▷ Improve application techniques. ▷ Change from spray to other system. ▷ Other surface preparation and finishing modifications. ▷ Product modifications.
	Product Modifications	▷ Change product specifications. ▷ Modify design or composition of product. ▷ Modify packaging. ▷ Other product modifications. ▷ Raw material modification.
	Raw Material Modification	▷ Increase purity of raw materials. ▷ Substitute raw materials. ▷ Other raw material modifications. ▷ Process modification.
	Process Modification	▷ Institute recirculation within a process. ▷ Modify equipment, layout, or piping. ▷ Use of a different process catalyst. ▷ Institute better controls on bulk containers to minimize discarding of empty containers. ▷ Change from small containers to bulk containers to minimize discarding of containers. ▷ Other process modifications. ▷ Cleaning and degreasing.
	Cleaning and Degreasing	▷ Modify stripping/cleaning equipment. ▷ Change to mechanical stripping/cleaning devices (from solvents to other materials). ▷ Change to aqueous cleaners (from solvents or other materials). ▷ Modify containment procedures for cleaning units. ▷ Improve draining procedures. ▷ Redesign parts racks to reduce dragout. ▷ Modify or install rinse systems. ▷ Improve rinse equipment design. ▷ Improve rinse equipment operation. ▷ Other cleaning and degreasing modifications. ▷ Reformulation.

Energy Conservation	Energy Conservation	▷ Use more efficient motors, lighting, refrigeration. ▷ Adjusting burners for optimal air/fuel ratio. ▷ Improve thermodynamic efficiency of the process. ▷ Insulate heating or cooling lines.

OTHER ENVIRONMENTAL MANAGEMENT TECHNIQUES

METHOD	AREAS	TECHNIQUES
Recycling	On-site Recycling	▷ Solvents/organics recovery - batch still distillation. ▷ Solvents/organics recovery - thin film evaporation. ▷ Solvents/organics recovery - fractionation. ▷ Solvents/organics recovery - solvent extraction. ▷ Solvents/organics recovery - other. ▷ Metals recovery - electrolytic. ▷ Metals recovery - ion exchange. ▷ Metals recovery - acid leaching. ▷ Metals recovery - reverse osmosis. ▷ Metals recovery - solvent extraction. ▷ Metals recovery - high temperature. ▷ Metals recovery - retorting. ▷ Metals recovery - secondary smelting. ▷ Metals recovery - other. ▷ Acid regeneration. ▷ Other reuse or recovery.
	Off-site Recycling	▷ Same as on-site recycling. ▷ Paper recycling, cardboard, plastic, wood.
Treatment	Waste Treatment (Air Emissions)	▷ Flare. ▷ Condenser. ▷ Scrubber. ▷ Absorber. ▷ Electrostatic precipitator. ▷ Mechanical separation. ▷ Other air emissions treatment.
	Biological Treatment	▷ Biological treatment - aerobic. ▷ Biological treatment - anaerobic. ▷ Biological treatment - facultative. ▷ Biological treatment - other.
	Chemical Treatment	▷ Chemical precipitation - lime or sodium hydroxide. ▷ Chemical precipitation - sulfide. ▷ Chemical precipitation - other. ▷ Neutralization. ▷ Chromium reduction. ▷ Complexed metals treatment (other than pH adjustment). ▷ Cyanide oxidation - alkaline chlorination. ▷ Cyanide oxidation - electrochemical. ▷ Cyanide oxidation - other. ▷ General oxidation (including disinfection) - chlorination. ▷ General oxidation (including disinfection) - ozonation. ▷ General oxidation (including disinfection) - other. ▷ Other chemical treatment.

	Incineration/ Thermal Treatment	⇨ Liquid injection. ⇨ Rotary kiln with liquid injection unit. ⇨ Other rotary kiln. ⇨ Two stage. ⇨ Fixed hearth. ⇨ Multiple hearth. ⇨ Fluidized bed. ⇨ Infra-red. ⇨ Fume/vapor. ⇨ Pyrolytic destructor. ⇨ Wet air oxidation. ⇨ Thermal drying/dewatering. ⇨ Other incineration/thermal treatment.

OTHER ENVIRONMENTAL MANAGEMENT TECHNIQUES (continued)

METHOD	AREAS	TECHNIQUES
Treatment	Solidification /Stabilization	⇨ Cement processes (including silicates). ⇨ Other possolonic processes (including silicates). ⇨ Asphaltic processes. ⇨ Thermoplastic techniques. ⇨ Other solidification processes.
	Physical Treatment	⇨ Equalization. ⇨ Other blending. ⇨ Settling/clarification. ⇨ Filtration. ⇨ Sludge dewatering (non-thermal). ⇨ Air flotation. ⇨ Oil skimming. ⇨ Emulsion breaking - thermal. ⇨ Emulsion breaking - chemical. ⇨ Emulsion breaking - other. ⇨ Other liquid phase separation. ⇨ Adsorption - carbon. ⇨ Adsorption - ion exchange (other than for recovery/reuse). ⇨ Adsorption - resin. ⇨ Adsorption - other. ⇨ Reverse osmosis (other than for recovery/reuse). ⇨ Stripping - air. ⇨ Stripping - stream. ⇨ Stripping - other. ⇨ Acid leaching (other than for recovery/reuse). ⇨ Solvent extraction (other than recovery/reuse). ⇨ Other physical treatment.
	Evaporation	
Energy Recovery	On-site Energy Recovery	⇨ Industrial kiln. ⇨ Industrial furnace. ⇨ Industrial boiler. ⇨ Other energy recovery methods. ⇨ Transfer to waste broker.
	Off-site Energy Recovery	Same as on-site energy recovery.

(Source: Pollution Prevention Guidance Manual, Arizona Department of Environmental Quality, September 1996, Document No. TB96-2)